

districts, were sent to Arizona. Commenting upon the forecasts of the early part of the month, the Riverside, Cal., Independent, of January 9, 1901, remarks editorially as follows:

The Weather Bureau's reports and predictions this season so far have been remarkably accurate, and their value can hardly be overestimated.

Frosts occurred at intervals during the month in the Gulf and extreme south Atlantic coast districts. In each instance all interests in the districts referred to received timely and accurate forecasts and warnings of approaching frost or freezing weather.

From the 8th to the 20th heavy rain and melting snow caused freshets and floods in the rivers of the Pacific coast States. During the second decade of the month rapid rises occurred in the Coosa, Alabama, and Tennessee rivers. Warnings were sent well in advance of the flood crests, and were of great benefit to property interests affected by the rapid rise in the rivers.

CHICAGO FORECAST DISTRICT.

With the exception of a cold wave which overspread the district on the 1st of January, for which warnings had been sent out well in advance, the month was marked by moderate temperature. On two or three occasions later in the month cold waves appeared in the Northwest, but they lost force before extending over a large part of the district.

There were some moderate snowfalls during the month but no warnings of heavy snows were issued.

Advisory messages were sent to all open ports on Lake Michigan several times when high winds threatened. No casualties on the lakes were reported during the month.—*H. J. Cox, Professor.*

SAN FRANCISCO FORECAST DISTRICT.

On January 1 special warnings of heavy frost were sent to fruit growers in southern California. On the morning of the 2d killing frosts were reported in central California, and a minimum of 24° was reported at San Luis Obispo. Frost warnings were issued on the 9th for southern California, and citrus fruit growers were warned to smudge vigorously. Heavy frosts were reported at nearly every point, with ice at some stations. Warnings or advisory messages regarding gales were telegraphed to coast stations during the early part of the month; on the morning of the 3d unusually high winds occurred at many points in California. At San Francisco a maximum wind velocity of 56 miles an hour was registered. Shipping interests had been well informed of the approach of the storm, and probably the small list of casualties is due in some measure to precautions taken, based upon warnings given.—*A. G. McAdie, Forecast Official.*

PORTLAND, OREG., FORECAST DISTRICT.

The first half of the month was especially noteworthy for the large amount of snow which fell in the mountains of southern Oregon. During this period severe storms occurred at sea, but in every instance warnings were issued in ample time to be of benefit, and no marine disasters, due to high winds, are known to have occurred during January. Heavy rains and melting snow in the foothills resulted in a small freshet in the Willamette River and tributaries between the 13th and 20th of the month. River forecasts were issued twice a day during the freshet, and while considerable damage was done in the streams above Portland to log rafts, small

bridges, etc., at Portland the damage was small and consisted principally of money expended in hiring extra labor to remove goods from cellars and wharfs to higher places. The maximum stage reached at Portland was 20.9 feet on the 17th. This stage at Portland would, if unannounced, result in damaging goods stored in cellars and on low wharfs to the extent of nearly, if not quite, a million dollars, but in this instance the damage was not worth noting, and this state of affairs was largely due to the flood warnings which were sufficiently reliable to enable nearly every one to remove his goods before the water reached them.—*Edward A. Beals, Forecast Official.*

AREAS OF HIGH AND LOW PRESSURE.

Movements of centers of areas of high and low pressure.

Number.	First observed.			Last observed.			Path.		Average velocities.	
	Date.	Lat. N.	Long. W.	Date.	Lat. N.	Long. W.	Length.	Duration.	Daily.	Hourly.
High areas.										
I.....	3, a. m.	53	108	6, p. m.	39	75	1,975	2.5*	790	32.0
II.....	5, p. m.	51	114	8, a. m.	39	75	2,100	2.5	840	35.0
III.....	7, p. m.	51	114	11, a. m.	47	65	2,325	3.5	664	27.7
IV.....	11, p. m.	32	96	13, a. m.	39	82	950	1.5	633	26.4
V.....	16, a. m.	54	114	17, a. m.	47	101	750	1.0	750	31.2
VI.....	18, a. m.	28	97	20, p. m.	32	65	2,375	2.0†	1,188	49.5
VII.....	20, p. m.	48	115	23, a. m.	46	60	2,900	2.5	1,160	48.3
VIII.....	22, p. m.	46	123	26, a. m.	39	82	2,625	3.5	750	31.2
IX.....	31, p. m.	30	91	2, a. m.‡	30	82	2,250	3.5	643	25.9
Sums.....							19,175	24.0	8,085	324.8
Mean of 10 paths.....							1,918		804	33.5
Mean of 24 days.....									799	33.3
Low areas.										
I.....	5, a. m.	48	125	10, a. m.	48	54	4,025	4.0*	1,006	41.9
II.....	5, p. m.	38	105	7, p. m.	45	67	2,250	2.0	1,125	45.9
III.....	8, a. m.	45	118	10, p. m.	43	73	2,225	2.5	890	37.1
IV.....	8, p. m.	33	106	14, a. m.	48	54	3,325	5.5	605	25.2
V.....	10, p. m.	48	125	12, a. m.	50	97	1,450	1.5	967	40.8
VI.....	12, a. m.	48	125	15, a. m.	46	82	2,200	3.0	733	30.5
	13, a. m.	53	122				3,750	6.0	625	25.0
VII.....	14, p. m.	49	110	19, a. m.	48	54	3,200	4.5	711	29.6
	17, a. m.	37	80				1,725	2.0	862	35.9
VIII.....	17, a. m.	54	114	19, a. m.	42	75	2,200	2.0	1,100	45.8
IX.....	18, p. m.	53	114	22, a. m.	48	54	2,525	3.5	807	33.6
	19, p. m.	54	114				3,000	2.5	1,200	50.0
X.....	21, p. m.	54	114				4,375	8.5	515	21.5
	20, a. m.	20	76	30, a. m.	45	55	3,300	8.0	412	17.2
	23, a. m.	35	96				3,150	7.0	450	18.8
XI.....	34, a. m.	53	123	26, p. m.	48	85	1,775	2.5	710	29.6
XII.....	35, a. m.	34	112	30, p. m.	35	93	1,150	1.5	767	32.0
	27, p. m.	54	114				3,575	4.5	861	35.9
XIII.....	27, a. m.	33	118	1, a. m.‡	43	60	3,500	5.0	700	29.2
	29, a. m.	26	97				2,475	3.0	825	34.4
Sums.....							55,775	79.0	15,871	661.4
Mean of 20 paths.....							2,789		794	33.1
Mean of 73 days.....									706	29.4

* Stationary for 1 day. † Stationary for half day. ‡ February.

RIVERS AND FLOODS.

With the exception of the Tennessee and Cumberland, the rivers of the Mississippi system were lower than during December, 1900, though not decidedly so. Below Cairo, Ill., the Mississippi River fell during the first half of the month, but was considerably higher during the last half, a rise from the Ohio reaching it on the 13th.

Low water caused a suspension of navigation between St. Louis, Mo., and Cairo, Ill., until the 14th, when it was resumed after an interruption of 23 days.

The Mississippi was frozen over during the entire month to below Leclaire, Iowa, and floating ice was observed as far south as Cairo, Ill., on the 2d and 3d. At Hannibal, Mo., the ice